

WHAT IS CLAIMED IS:

1 1. Apparatus for obtaining endoluminal access, the apparatus comprising:
2 an elongate body having a working axis and a distal region, the elongate body
3 configured for insertion within a body lumen; and
4 at least one articulating element disposed near or at the distal region of the
5 elongate body,
6 wherein the articulating element is configured to articulate off-axis from the
7 working axis of the elongate body.

1 2. The apparatus of claim 1, wherein the articulating element comprises a
2 visualization element configured to image within a body lumen.

1 3. The apparatus of claim 1, wherein the articulating element comprises
2 the distal region of a lumen extending through the elongate body.

1 4. The apparatus of claim 1, wherein the apparatus has a delivery
2 configuration in which the articulating element is aligned with or adjacent to the working axis
3 of the elongate body, and a deployed configuration wherein the articulating element is
4 articulated off-axis from the working axis of the elongate body.

1 5. The apparatus of claim 1, wherein the articulating element further
2 comprises at least two articulating elements.

1 6. The apparatus of claim 5, wherein the at least two articulating elements
2 are configured for independent off-axis articulation.

1 7. The apparatus of claim 5, wherein the at least two articulating elements
2 are configured for coordinated off-axis articulation.

1 8. The apparatus of claim 3, wherein the at least two articulating elements
2 comprise at least two visualization elements configured to provide stereoscopic visualization.

1 9. The apparatus of claim 8, wherein a focal depth of the at least two
2 visualization elements may be altered by altering a relative angle between the at least two
3 visualization elements.

- 1 10. The apparatus of claim 2, wherein the visualization element comprises
2 a fiber optic visualization element.
- 1 11. The apparatus of claim 2, wherein the visualization element comprises
2 a video chip coupled to a signal-processing unit.
- 1 12. The apparatus of claim 11, wherein the video chip comprises an image
2 sensor.
- 1 13. The apparatus of claim 12, wherein the image sensor is chosen from
2 the group consisting of charge coupled device (CCD) image sensors, complementary metal
3 oxide semiconductor (CMOS) image sensors, multi-layer solid state image sensors, direct
4 image sensors, and combinations thereof.
- 1 14. The apparatus of claim 2, wherein the visualization element is coupled
2 to a display unit.
- 1 15. The apparatus of claim 1, wherein the elongate body further defines a
2 lumen.
- 1 16. The apparatus of claim 15, wherein off-axis articulation of the
2 articulating element is configured to expose a distal opening of the lumen.
- 1 17. The apparatus of claim 4, wherein the elongate body further defines a
2 lumen, and wherein a distal opening of the lumen is exposed in the deployed configuration.
- 1 18. The apparatus of claim 17, wherein the distal opening is covered by the
2 articulating element in the delivery configuration.
- 1 19. The apparatus of claim 1 further comprising a visualization element.
- 1 20. The apparatus of claim 19, wherein off-axis articulation of the
2 articulating element is configured to expose the visualization element.
- 1 21. The apparatus of claim 2 further comprising a light source configured
2 to illuminate the interior of the body lumen and facilitate visualization with the visualization
3 element.

- 1 22. The apparatus of claim 15 wherein the elongate body further defines
2 multiple lumens.
- 1 23. The apparatus of claim 1 further comprising a housing configured to
2 couple the articulating element to the elongate body and to facilitate articulation of the
3 articulating element.
- 1 24. The apparatus of claim 23, wherein the housing comprises at least one
2 linkage for articulating the articulating element.
- 1 25. The apparatus of claim 2, wherein the visualization element comprises
2 optics.
- 1 26. The apparatus of claim 1, wherein the elongate body is steerable.
- 1 27. The apparatus of claim 1, wherein the elongate body is rigidizable.
- 1 28. The apparatus of claim 1, wherein the articulating element further
2 comprises a steerable shaft.
- 1 29. The apparatus of claim 1, wherein the articulating element further
2 comprises a diagnostic or therapeutic tool.
- 1 30. The apparatus of claim 1 further comprising an atraumatic tip.
- 1 31. A method for obtaining endoluminal access, the method comprising:
2 advancing an elongate body having an articulatable element disposed near or
3 at a distal region thereof into a body lumen; and
4 articulating the articulatable element from a position in-line with or adjacent to
5 a working axis of the elongate body to a position out-of-line with the working axis.
- 1 32. The method of claim 31, further comprising imaging within the body
2 lumen with a visualization element disposed within or upon the articulatable element.
- 1 33. The method of claim 32, wherein imaging further comprises imaging
2 stereoscopically.

1 34. The method of claim 31, wherein articulating the articulatable element
2 comprises exposing a distal opening of at least one lumen defined within the elongate body.

1 35. The method of claim 34 further comprising advancing a tool through
2 the lumen.

1 36. The method of claim 34 further comprising injecting or withdrawing a
2 fluid through the lumen.

1 37. The method of claim 31, wherein articulating the articulatable element
2 further comprises expanding the articulatable element from a reduced delivery configuration
3 to an expanded deployed configuration.

1 38. The method of claim 31 further comprising repositioning the
2 articulating element in-line with or adjacent to the working axis of the elongate body.

1 39. The method of claim 38 further comprising removing the elongate
2 body from the body lumen.

1 40. The method of claim 38 further comprising manipulating the elongate
2 body and re-articulating the articulatable element out-of-line with the working axis.

1 41. The method of claim 33, further comprising altering a focal depth
2 during stereoscopic imaging.

1 42. The method of claim 31 further comprising steering the elongate body
2 within the body lumen.

1 43. The method of claim 31 further comprising rigidizing the elongate
2 body within the body lumen.

1 44. Apparatus for obtaining endoluminal access, the apparatus comprising:
2 a steerable guide having a working axis, at least one lumen and a distal region,
3 the guide configured for insertion within the body lumen; and
4 an articulating element disposed near the distal region of the steerable guide,
5 wherein the articulating element is configured to articulate off-axis from the
6 working axis of the elongate body.

1 45. The apparatus of claim 44, wherein the steerable guide is configured to
2 steer the articulating element within the body lumen to facilitate access to regions of interest
3 within the body lumen.

1 46. The apparatus of claim 44, wherein the articulating element comprises
2 a distal region of the lumen.

1 47. The apparatus of claim 44, wherein the articulating element comprises
2 a visualization element.

1 48. The apparatus of claim 44, wherein the articulating element further
2 comprises a steerable shaft.

1 49. The apparatus of claim 44, wherein the articulating element comprises
2 a diagnostic or therapeutic tool.

1 50. The apparatus of claim 44 further comprising an atraumatic tip.